Resources

In this semester, these are the tools that you will need to get used to. We will use Python as a programming language and implement all the codes either in *.py (python program file) or *.ipynb (Jupyter Notebook file).

- **Python:** Make sure to install the recent Python 3.8 for the classwork. You can easily install all the tools by following the instructions below.
- **Jupyter Notebook**: Jupyter Notebook is the most popular literate programming tool that is compatible with diverse programming languages (over 40 languages including Python, R, Julia, and Scala). This will help you write your summary, observation, your codes, and execution results. We will provide you the lecture notes, practice materials, and assignment directions in Jupyter Notebook so that you can learn from the examples.
- **Scipy** and **Numpy**: These are the major Python libraries that you need to implement ML algorithms. You will be an experienced programmer by repeatedly practicing them.
- **Matplotlib**: Visualization is key to observe your data and analyze the experimental results with the learned model. Matplotlib (or Plotly) helps you produce the plots so you can easily observe the data and results.
- **Scikit.Learn**: You will learn how to use machine learning tools in Scikit.Learn to analyze or find patterns in your data.
- Docker: You will learn how to set up and use portable environments for your ML projects.

These are the essential tools that you must practice as much as possible. The other tools will be introduced if we need them as the semester progresses.

Next Steps (If you did not complete Module 0)

1. It is now time to download and install Anaconda that includes all the above tools. You can find the instruction at this link.
2. You can look at the Scipy Lecture Notes and practice the tools. If you are already familiar with the some of sections, skip and practice only the ones that you don't know.
3. Follow Module 1 to learn the basics of ML and prepare your systems to be ML-ready.

Please do not hesitate to ask questions if you have any trouble with installation or learning the tools.

«Useful Links

Python

- Python Tutorial ⬀ Links to an external site.
- Learning Python on the Hard Way - Python 2 ⬀ Links to an external site.
- Google's Python Class ⬀ Links to an external site.
- iPython ⬀ Links to an external site.

Scipy, Numpy, Matplotlib

- Scipy Lecture Notes ⬀ Links to an external site.
- Numpy Cheat Sheet ⬀ Links to an external site.
- Numpy Reference ⬀ Links to an external site.

- Scipy Community Coding Guidelines ⮕ Links to an external site.
- Python Tools for Science ⮕ Links to an external site.

Jupyter Notebook

- Markdown Syntax Guide ⮕ Links to an external site.
- Spell checking ⮕ Links to an external site.

Git and Github/Bitbucket

- Tutorial ⮕ Links to an external site.
- Quick Introduction ⮕ Links to an external site.
- Pro Git Book ⮕ Links to an external site.

Data/Applications

- Google Dataset Search ⮕ Links to an external site.
- UCI Data Repository ⮕ Links to an external site.
- Kaggle Data ⮕ Links to an external site.
- KDNugget ⮕ Links to an external site.
- ImageNet ⮕ Links to an external site.
- OpenAI Gym ⮕ Links to an external site.
- Robot Benchmark ⮕ Links to an external site.

Educational Clusters

- URC Web ⮕ Links to an external site.

Latex

- Latex Wiki ⮕ Links to an external site.